

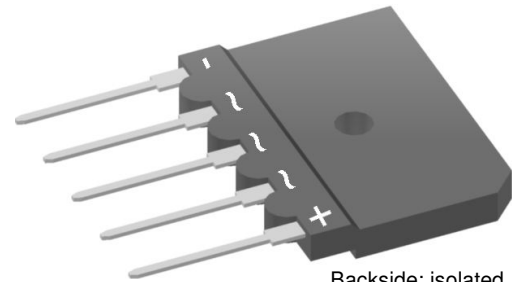
## Standard Rectifier

<b>3~ Rectifier</b>	
$V_{RRM}$	= 1800 V
$I_{DAV}$	= 40 A
$I_{FSM}$	= 370 A

### 3~ Rectifier Bridge

Part number

**DMA40U1800GU**



Backside: isolated

 E72873



#### Features / Advantages:

- Low forward voltage drop
- Planar passivated chips
- Easy to mount with one screw
- Space and weight savings

#### Applications:

- Supplies for DC power equipment
- Input rectifiers for PWM inverter
- Battery DC power supplies
- Field supply for DC motors

#### Package: GUPF

- Isolation Voltage: 2500 V~
- Industry standard outline
- RoHS compliant
- Epoxy meets UL 94V-0
- Soldering pins for PCB mounting
- Base plate: Plastic overmolded tab
- Reduced weight

#### Terms and Conditions of Usage

The data contained in this product data sheet is exclusively intended for technically trained staff. The user will have to evaluate the suitability of the product for the intended application and the completeness of the product data with respect to his application. The specifications of our components may not be considered as an assurance of component characteristics. The information in the valid application- and assembly notes must be considered. Should you require product information in excess of the data given in this product data sheet or which concerns the specific application of your product, please contact your local sales office.

Due to technical requirements our product may contain dangerous substances. For information on the types in question please contact your local sales office.

Should you intend to use the product in aviation, in health or life endangering or life support applications, please notify. For any such application we urgently recommend

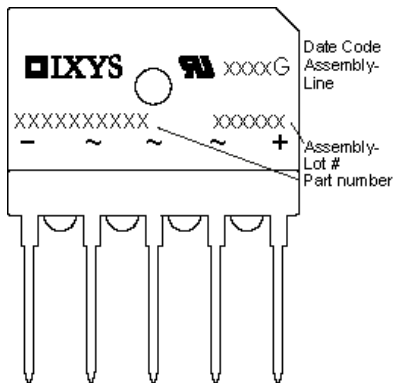
- to perform joint risk and quality assessments;

- the conclusion of quality agreements;

- to establish joint measures of an ongoing product survey, and that we may make delivery dependent on the realization of any such measures.

Rectifier				Ratings			
Symbol	Definition	Conditions		min.	typ.	max.	Unit
$V_{RSM}$	max. non-repetitive reverse blocking voltage					1900	V
$V_{RRM}$	max. repetitive reverse blocking voltage					1800	V
$I_R$	reverse current	$V_R = 1800$ V		$T_{VJ} = 25^\circ\text{C}$		40	$\mu\text{A}$
		$V_R = 1800$ V		$T_{VJ} = 150^\circ\text{C}$		1.5	mA
$V_F$	forward voltage drop	$I_F = 10$ A		$T_{VJ} = 25^\circ\text{C}$		1.06	V
		$I_F = 30$ A				1.28	V
		$I_F = 10$ A		$T_{VJ} = 150^\circ\text{C}$		0.92	V
		$I_F = 30$ A				1.23	V
$I_{DAV}$	bridge output current	$T_C = 90^\circ\text{C}$	rectangular	$T_{VJ} = 175^\circ\text{C}$		40	A
			$d = \frac{1}{3}$				
$V_{FO}$	threshold voltage			$T_{VJ} = 175^\circ\text{C}$		0.74	V
$r_F$	slope resistance					16.3	m $\Omega$
						} for power loss calculation only	
$R_{thJC}$	thermal resistance junction to case					4.3	K/W
$R_{thCH}$	thermal resistance case to heatsink				0.50		K/W
$P_{tot}$	total power dissipation			$T_C = 25^\circ\text{C}$		35	W
$I_{FSM}$	max. forward surge current	$t = 10$ ms; (50 Hz), sine		$T_{VJ} = 45^\circ\text{C}$		370	A
		$t = 8,3$ ms; (60 Hz), sine		$V_R = 0$ V		400	A
		$t = 10$ ms; (50 Hz), sine		$T_{VJ} = 150^\circ\text{C}$		315	A
		$t = 8,3$ ms; (60 Hz), sine		$V_R = 0$ V		340	A
$I^2t$	value for fusing	$t = 10$ ms; (50 Hz), sine		$T_{VJ} = 45^\circ\text{C}$		685	A <sup>2</sup> s
		$t = 8,3$ ms; (60 Hz), sine		$V_R = 0$ V		665	A <sup>2</sup> s
		$t = 10$ ms; (50 Hz), sine		$T_{VJ} = 150^\circ\text{C}$		495	A <sup>2</sup> s
		$t = 8,3$ ms; (60 Hz), sine		$V_R = 0$ V		480	A <sup>2</sup> s
$C_J$	junction capacitance	$V_R = 400$ V; $f = 1$ MHz		$T_{VJ} = 25^\circ\text{C}$		10	pF

Package GUPF		Ratings				
Symbol	Definition	Conditions	min.	typ.	max.	Unit
$I_{RMS}$	RMS current	per terminal			70	A
$T_{VJ}$	virtual junction temperature		-40		175	°C
$T_{op}$	operation temperature		-40		150	°C
$T_{stg}$	storage temperature		-40		150	°C
<b>Weight</b>				8.5		g
$M_D$	mounting torque		0.8		1.2	Nm
$F_C$	mounting force with clip		20		120	N
$d_{Spp/App}$	creepage distance on surface   striking distance through air	terminal to terminal	6.7	5.4		mm
$d_{Spb/Apb}$		terminal to backside	10.0	8.0		mm
$V_{ISOL}$	isolation voltage	t = 1 second	50/60 Hz, RMS; $I_{ISOL} \leq 1$ mA	2500		V
		t = 1 minute		2100		V



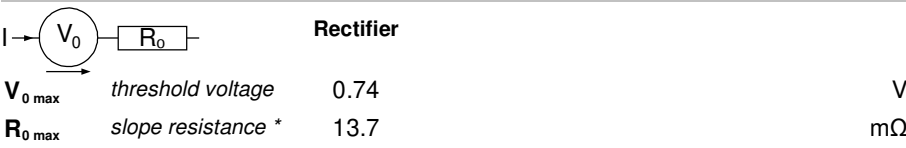
### Part description

- D = Diode
- M = Standard Rectifier
- A = (up to 1800V)
- 40 = Current Rating [A]
- U = 3- Rectifier Bridge
- 1800 = Reverse Voltage [V]
- GU = GUPF

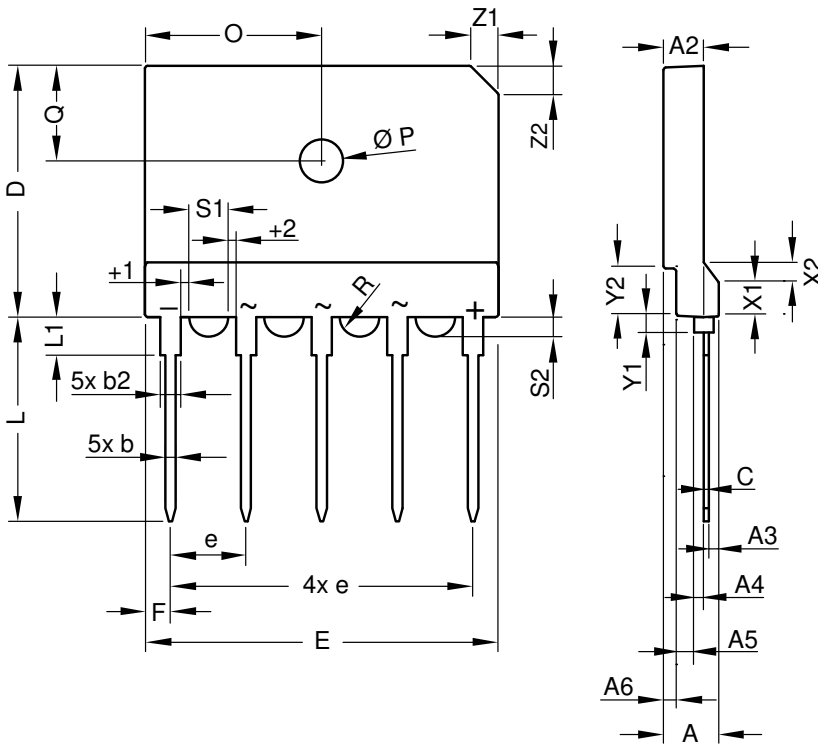
Ordering	Ordering Number	Marking on Product	Delivery Mode	Quantity	Code No.
Standard	DMA40U1800GU	DMA40U1800GU	Tube	14	514906

Similar Part	Package	Voltage class
DNA40U2200GU	GUPF	2200
GUO40-16NO1	GUPF	1600
GUO40-12NO1	GUPF	1200
GUO40-08NO1	GUPF	800

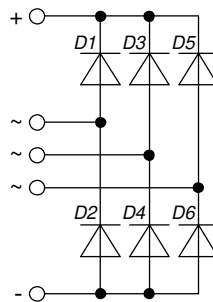
### Equivalent Circuits for Simulation \* on die level $T_{VJ} = 175^\circ\text{C}$



## Outlines GUPF



Dim.	Millimeter			Inches		
	min	typ.	max	min	typ.	max
A	5.40	5.50	5.60	0.213	0.217	0.221
A2	3.90	4.00	4.10	0.154	0.158	0.162
A3	0.95	1.00	1.10	0.037	0.039	0.043
A4	0.95	1.00	1.05	0.037	0.039	0.041
A5	1.60	1.70	1.80	0.063	0.067	0.071
A6	1.25	1.30	1.35	0.049	0.051	0.053
b	0.95	1.00	1.05	0.037	0.039	0.041
b2	1.95	2.00	2.05	0.077	0.079	0.081
C	0.45	0.50	0.55	0.018	0.020	0.022
D	24.80	25.00	25.20	0.977	0.985	0.993
E	34.70	35.00	35.30	1.367	1.379	1.391
e	BSC 7.50			BSC 0.296		
F	2.40	2.50	2.60	0.095	0.099	0.102
L	20.30	20.40	20.50	0.800	0.804	0.808
L1	3.70	3.75	3.80	0.146	0.148	0.150
O	17.40	17.50	17.60	0.686	0.690	0.693
$\varnothing P$	4.10	4.20	4.30	0.162	0.165	0.169
Q	9.20	9.30	9.40	0.362	0.366	0.370
$\varnothing/2 R$		1.77			0.070	
s1	3.45	3.50	3.55	0.136	0.138	0.140
s2	1.45	1.50	1.55	0.057	0.059	0.061
t1	0.95	1.00	1.05	0.037	0.039	0.041
t2	0.95	1.00	1.05	0.037	0.039	0.041
x1	3.20	3.30	3.40	0.126	0.130	0.134
x2	1.90	2.00	2.10	0.075	0.079	0.083
y1	1.60	1.65	1.70	0.063	0.065	0.067
y2	4.65	4.70	4.75	0.183	0.185	0.187
z1	2.80	2.90	3.00	0.110	0.114	0.118



**Rectifier**

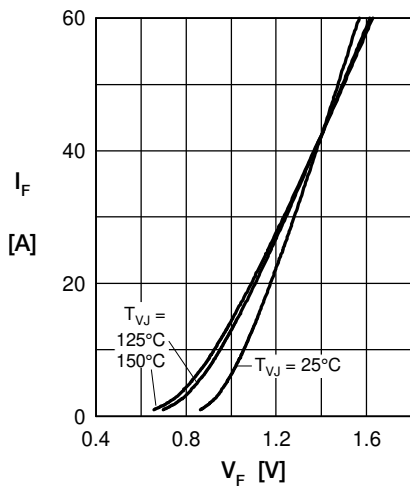


Fig. 1 Forward current vs. voltage drop per diode

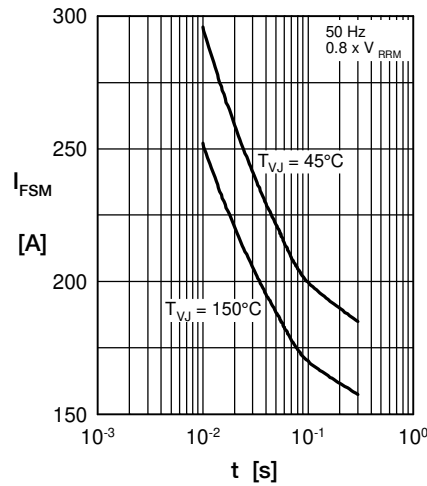


Fig. 2 Surge overload current vs. time per diode

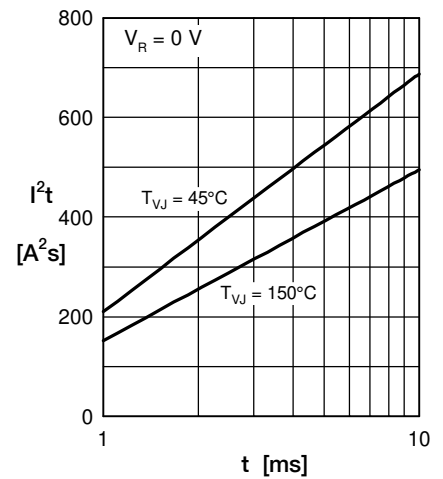


Fig. 3  $I^2t$  vs. time per diode

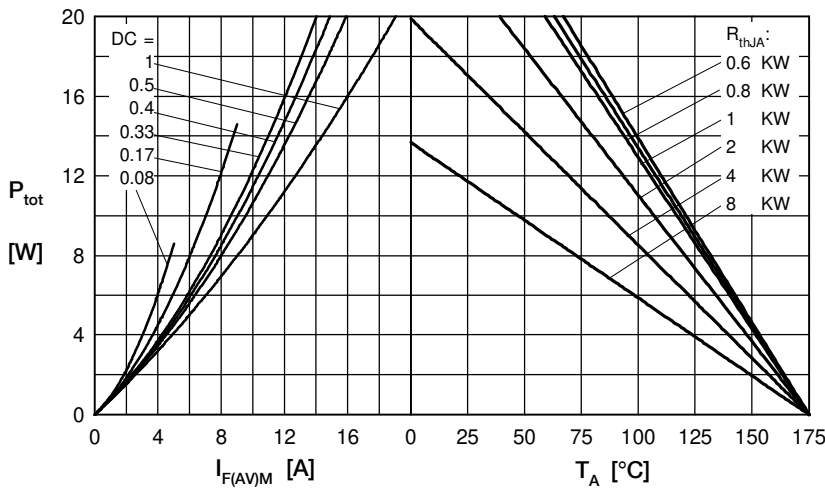


Fig. 4 Power dissipation vs. forward current and ambient temperature per diode

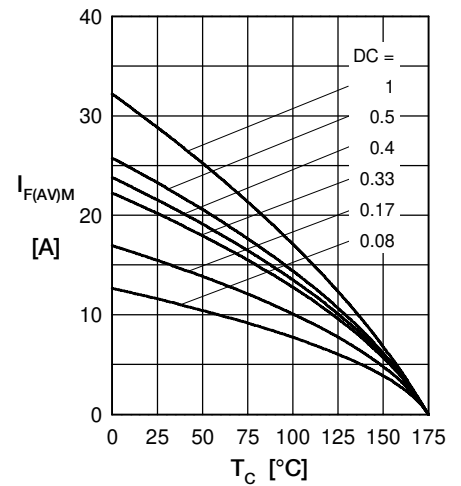


Fig. 5 Max. forward current vs. case temperature per diode

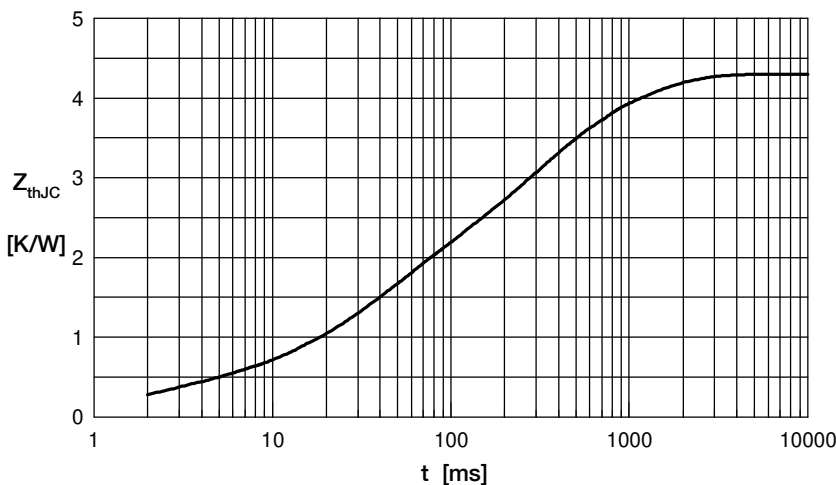


Fig. 6 Transient thermal impedance junction to case vs. time per diode

Constants for  $Z_{thJC}$  calculation:

i	$R_{th}$ (K/W)	$t_i$ (s)
1	0.302	0.002
2	1.252	0.032
3	1.582	0.227
4	1.164	0.820